

## SEQUENCE LISTING

<110> National Institute of Advanced Industrial Science and Technology

<120> N-glycan synthesis gene

<130> -23603058

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<150> JP 2002-230196

<151> 2002-08-07

<160> 10

<170> PatentIn Ver. 2.1

<210> 1

<211> 1479

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (1)..(1479)

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Val Cys Leu Val Ile Val Leu Trp Gly Ile Arg Leu Leu Leu Gln Arg			
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gtt tta tgg tgt gct tta aga gcc ctg cag aaa aag tat cct gaa gca	288		
Val Leu Trp Cys Ala Leu Arg Ala Leu Gln Lys Lys Tyr Pro Glu Ala			
85	90	95	
gtt tat gtt gtt tat acc ggc gat gtt aat gtc aac ggt caa cag ata	336		
Val Tyr Val Val Tyr Thr Gly Asp Val Asn Val Asn Gly Gln Gln Ile			
100	105	110	
cta gaa ggt gct ttc aga aga ttt aac atc aga tta att cac cca gtg	384		
Leu Glu Gly Ala Phe Arg Arg Phe Asn Ile Arg Leu Ile His Pro Val			
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Gln Phe Val Phe Leu Arg Lys Arg Tyr Leu Val Glu Asp Ser Leu Tyr			
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Pro His Phe Thr Leu Leu Gly Gln Ser Leu Gly Ser Ile Phe Leu Gly			
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cac aat tcg ggg ggc cca aag ctt gac att gtg gtt cct cac gaa gga 1296  
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gat ata act ggc ttt ctg gct gag agt gaa gaa gac tat gct gaa act 1344  
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 35 40 45  
 Lys Lys Lys Leu Val Ser Thr Ser Lys Asn Gly Lys Asn Gln Met Val  
 50 55 60  
 Ile Ala Phe Phe His Pro Tyr Cys Asn Ala Gly Gly Gly Gly Glu Arg  
 65 70 75 80  
 Val Leu Trp Cys Ala Leu Arg Ala Leu Gln Lys Lys Tyr Pro Glu Ala  
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195	200	205
Val Val Lys Asn Gln Asn Ile Gly Phe Asn Asn Ala Ala Phe Ile Thr		
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Ala Phe Ile Tyr Gly Leu Val Gly Ser Cys Ser Asp Val Val Met Val		
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Asn Ser Ser Trp Thr Leu Asn His Ile Leu Ser Leu Trp Lys Val Gly		
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Leu Lys Leu Val Leu Ile Gly Gly Cys Arg Asn Lys Asp Asp Glu Leu		
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Arg Val Asn Gln Leu Arg Arg Leu Ser Glu Asp Leu Gly Val Gln Glu		
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Tyr Val Glu Phe Lys Ile Asn Ile Pro Phe Asp Glu Leu Lys Asn Tyr		
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Leu Ser Glu Ala Thr Ile Gly Leu His Thr Met Trp Asn Glu His Phe		

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385          390          395          400
Gly Ile Gly Val Val Glu Cys Met Ala Ala Gly Thr Ile Ile Leu Ala
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Asp Ile Thr Gly Phe Leu Ala Glu Ser Glu Glu Asp Tyr Ala Glu Thr
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Ile Ala His Ile Leu Ser Met Ser Ala Glu Lys Arg Leu Gln Ile Arg
          450          455          460
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Val Thr Phe Leu Ser Ser Val Glu Lys Leu Phe Lys
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<213> Homo sapiens

<220>

<221> CDS

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ttg gcg ctc ggg gtg act ctt ctc aaa tgc ctt ctc atc ccc aca tac   96
Leu Ala Leu Gly Val Thr Leu Leu Lys Cys Leu Leu Ile Pro Thr Tyr
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ttg gat tac ccc cct ttc ttt gca tgg ttt gag tat atc ctg tca cat	240	
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85	90	95
tac tcc agc tca agg acc tta ctt ttc cag aga ttt tcc gtc atc ttt	336	
Tyr Ser Ser Ser Arg Thr Leu Leu Phe Gln Arg Phe Ser Val Ile Phe		
100	105	110
atg gat gta ctc ttt gtg tat gct gtc cgt gag tgc tgt aaa tgc att	384	
Met Asp Val Leu Phe Val Tyr Ala Val Arg Glu Cys Cys Lys Cys Ile		
115	120	125
gat gga aaa aaa gtg ggt aaa gaa ctt aca gaa aag cca aaa ttt att	432	
Asp Gly Lys Lys Val Gly Lys Glu Leu Thr Glu Lys Pro Lys Phe Ile		
130	135	140
ctg tcg gta tta ctt ctg tgg aac ttc ggg tta tta att gtg gac cat	480	
Leu Ser Val Leu Leu Leu Trp Asn Phe Gly Leu Leu Ile Val Asp His		
145	150	155
att cat ttt cag tac aat ggc ttt tta ttt gga tta atg cta ctc tcc	528	
Ile His Phe Gln Tyr Asn Gly Phe Leu Phe Gly Leu Met Leu Leu Ser		
165	170	175



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                   180                  185                  190

gct gtt ctc cta cat ttc aag cat atc tac ctc tat gta gca cca gct 624  
 Ala Val Leu Leu His Phe Lys His Ile Tyr Leu Tyr Val Ala Pro Ala  
                   195                  200                  205

tat ggt gta tat ctg ctg cga tcc tac tgt ttc act gca aat aaa cca 672  
 Tyr Gly Val Tyr Leu Leu Arg Ser Tyr Cys Phe Thr Ala Asn Lys Pro  
                   210                  215                  220

gat ggg tct att cga tgg aag agt ttc agc ttt gtt cgt gtt att tcc 720  
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ctg gga ctg gtt gtt ttc tta gtt tct gct ctt tca ttg ggt cct ttc 768  
 Leu Gly Leu Val Val Phe Leu Val Ser Ala Leu Ser Leu Gly Pro Phe  
                   245                  250                  255

ctg gcc ttg aat cag ctg cct caa gtc ttt tcc cga ctc ttt cct ttc 816  
 Leu Ala Leu Asn Gln Leu Pro Gln Val Phe Ser Arg Leu Phe Pro Phe  
                   260                  265                  270

aag agg ggc ctc tgt cat gca tat tgg gct cca aac ttc tgg gct ttg 864  
 Lys Arg Gly Leu Cys His Ala Tyr Trp Ala Pro Asn Phe Trp Ala Leu  
                   275                  280                  285

tac aat gct ttg gac aaa gtg ctg tct gtc atc ggt ttg aa ttg aaa 912  
 Tyr Asn Ala Leu Asp Lys Val Leu Ser Val Ile Gly Leu Lys Leu Lys  
                   290                  295                  300

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Thr Leu Ile Cys Thr Leu Ile Ala Ile Leu Pro Ser Ile Phe Cys Leu				
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Trp Phe Lys Pro Gln Gly Pro Arg Gly Phe Leu Arg Cys Leu Thr Leu				
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tgt gcc ttg agc tcc ttt atg ttt ggg tgg cat gtt cat gaa aaa gcc				1152
Cys Ala Leu Ser Ser Phe Met Phe Gly Trp His Val His Glu Lys Ala				
	370	375	380	
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Ile Leu Leu Ala Ile Leu Pro Met Ser Leu Leu Ser Val Gly Lys Ala				
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Gly Asp Ala Ser Ile Phe Leu Ile Leu Thr Thr Thr Gly His Tyr Ser				
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Leu Phe Pro Leu Leu Phe Thr Ala Pro Glu Leu Pro Ile Lys Ile Leu				
	420	425	430	
ctc atg tta cta ttc acc ata tat agt att tcg tca ctg aag act tta				1344
Leu Met Leu Leu Phe Thr Ile Tyr Ser Ile Ser Ser Leu Lys Thr Leu				
	435	440	445	

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 465 470 475 480

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 Thr Ser Trp Lys Val Lys Tyr Pro Phe Ile Pro Leu Leu Leu Thr Ser  
 485 490 495

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 500 505 510

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<213> Homo sapiens

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His Ser Thr Asp Phe Glu Val His Arg Asn Trp Leu Ala Ile Thr His  
 35 40 45

Ser Leu Pro Ile Ser Gln Trp Tyr Tyr Glu Ala Thr Ser Glu Trp Thr  
 50 55 60

Leu Asp Tyr Pro Pro Phe Phe Ala Trp Phe Glu Tyr Ile Leu Ser His  
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 Val Ala Lys Tyr Phe Asp Gln Glu Met Leu Asn Val His Asn Leu Asn  
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 Tyr Ser Ser Ser Arg Thr Leu Leu Phe Gln Arg Phe Ser Val Ile Phe  
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 Met Asp Val Leu Phe Val Tyr Ala Val Arg Glu Cys Cys Lys Cys Ile  
 115 120 125  
 Asp Gly Lys Lys Val Gly Lys Glu Leu Thr Glu Lys Pro Lys Phe Ile  
 130 135 140  
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 145 150 155 160  
 Ile His Phe Gln Tyr Asn Gly Phe Leu Phe Gly Leu Met Leu Leu Ser  
 165 170 175  
 Ile Ala Arg Leu Phe Gln Lys Arg His Met Glu Gly Ala Phe Leu Phe  
 180 185 190  
 Ala Val Leu Leu His Phe Lys His Ile Tyr Leu Tyr Val Ala Pro Ala  
 195 200 205  
 Tyr Gly Val Tyr Leu Leu Arg Ser Tyr Cys Phe Thr Ala Asn Lys Pro  
 210 215 220  
 Asp Gly Ser Ile Arg Trp Lys Ser Phe Ser Phe Val Arg Val Ile Ser  
 225 230 235 240  
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 260 265 270  
 Lys Arg Gly Leu Cys His Ala Tyr Trp Ala Pro Asn Phe Trp Ala Leu  
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 Tyr Asn Ala Leu Asp Lys Val Leu Ser Val Ile Gly Leu Lys Leu Lys  
 290 295 300  
 Phe Leu Asp Pro Asn Asn Ile Pro Lys Ala Ser Met Thr Ser Gly Leu  
 305 310 315 320  
 Val Gln Gln Phe Gln His Thr Val Leu Pro Ser Val Thr Pro Leu Ala  
 325 330 335  
 Thr Leu Ile Cys Thr Leu Ile Ala Ile Leu Pro Ser Ile Phe Cys Leu

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Cys Ala Leu Ser Ser Phe Met Phe Gly Trp His Val His Glu Lys Ala			
370	375	380	
Ile Leu Leu Ala Ile Leu Pro Met Ser Leu Leu Ser Val Gly Lys Ala			
385	390	395	400
Gly Asp Ala Ser Ile Phe Leu Ile Leu Thr Thr Thr Gly His Tyr Ser			
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Leu Phe Pro Leu Leu Phe Thr Ala Pro Glu Leu Pro Ile Lys Ile Leu			
420	425	430	
Leu Met Leu Leu Phe Thr Ile Tyr Ser Ile Ser Ser Leu Lys Thr Leu			
435	440	445	
Phe Arg Lys Glu Lys Pro Leu Phe Asn Trp Met Glu Thr Phe Tyr Leu			
450	455	460	
Leu Gly Leu Gly Pro Leu Glu Val Cys Cys Glu Phe Val Phe Pro Phe			
465	470	475	480
Thr Ser Trp Lys Val Lys Tyr Pro Phe Ile Pro Leu Leu Leu Thr Ser			
485	490	495	
Val Tyr Cys Ala Val Gly Ile Thr Tyr Ala Trp Phe Lys Leu Tyr Val			
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Ser Val Leu Ile Asp Ser Ala Ile Gly Lys Thr Lys Lys Gln			
515	520	525	

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&lt;211&gt; 1857

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1857)

&lt;400&gt; 5

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agt ggg gat acg gcc ccg gct gcg gac aag ctg cgg gag ctg ctg ggc 96  
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agc cga gag gcg ggc ggc gcg gag cac cgg acc gag tta tct ggg aac 144  
 Ser Arg Glu Ala Gly Gly Ala Glu His Arg Thr Glu Leu Ser Gly Asn  
 35 40 45

aaa gca gga caa gtc tgg gca cct gaa gga tct act gct ttc aag tgt 192  
 Lys Ala Gly Gln Val Trp Ala Pro Glu Gly Ser Thr Ala Phe Lys Cys  
 50 55 60

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 65 70 75 80

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 Cys Asp Glu Thr Phe Asn Tyr Trp Glu Pro Thr His Tyr Leu Ile Tyr  
 85 90 95

ggg gaa ggg ttt cag act tgg gaa tat tcc cca gca tat gcc att cgc 336  
 Gly Glu Gly Phe Gln Thr Trp Glu Tyr Ser Pro Ala Tyr Ala Ile Arg  
 100 105 110

tcc tat gct tac ctg ttg ctt cat gcc tgg cca gct gca ttt cat gca 384  
 Ser Tyr Ala Tyr Leu Leu Leu His Ala Trp Pro Ala Ala Phe His Ala  
 115 120 125

aga att cta caa act aat aag att ctt gtg ttt tac ttt ttg cga tgt 432

Arg Ile Leu Gln Thr Asn Lys Ile Leu Val Phe Tyr Phe Leu Arg Cys	
130	140
ctt ctg gct ttt gtg agc tgt att tgt gaa ctt tac ttt tac aag gct	480
Leu Leu Ala Phe Val Ser Cys Ile Cys Glu Leu Tyr Phe Tyr Lys Ala	
145	160
gtg tgc aag aag ttt ggg ttg cac gtg agt cga atg atg cta gcc ttc	528
Val Cys Lys Lys Phe Gly Leu His Val Ser Arg Met Met Leu Ala Phe	
165	175
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Leu Val Leu Ser Thr Gly Met Phe Cys Ser Ser Ser Ala Phe Leu Pro	
180	190
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Ser Ser Phe Cys Met Tyr Thr Thr Leu Ile Ala Met Thr Gly Trp Tyr	
195	205
atg gac aag act tcc att gct gtg ctg gga gta gca gct ggg gct atc	672
Met Asp Lys Thr Ser Ile Ala Val Leu Gly Val Ala Ala Gly Ala Ile	
210	220
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Leu Gly Trp Pro Phe Ser Ala Ala Leu Gly Leu Pro Ile Ala Phe Asp	
225	240
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Leu Leu Val Met Lys His Arg Trp Lys Ser Phe Phe His Trp Ser Leu	
245	255
atg gcc ctc ata cta ttt ctg gtg cct gtg gtg gtc att gac agc tac	816
Met Ala Leu Ile Leu Phe Leu Val Pro Val Val Val Ile Asp Ser Tyr	
260	270

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Tyr Tyr Gly Lys Leu Val Ile Ala Pro Leu Asn Ile Val Leu Tyr Asn	
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Ile Phe Thr Pro His Gly Pro Asp Leu Tyr Gly Thr Glu Pro Trp Tyr	
290 295 300	
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Phe Tyr Leu Ile Asn Gly Phe Leu Asn Phe Asn Val Ala Phe Ala Leu	
305 310 315 320	
gct ctc cta gtc cta cca ctg act tct ctt atg gaa tac ctg ctg cag	1008
Ala Leu Leu Val Leu Pro Leu Thr Ser Leu Met Glu Tyr Leu Leu Gln	
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340 345 350	
cca atg tat att tgg ttt ata att ttc ttc atc cag cct cac aaa gag	1104
Pro Met Tyr Ile Trp Phe Ile Ile Phe Phe Ile Gln Pro His Lys Glu	
355 360 365	
gag aga ttt ctt ttc cct gtg tat cca ctt ata tgt ctc tgt ggt gct	1152
Glu Arg Phe Leu Phe Pro Val Tyr Pro Leu Ile Cys Leu Cys Gly Ala	
370 375 380	
gtg gct ctc tct gca ctt cag cac agt ttt ctg tac ttc cag aaa tgt	1200
Val Ala Leu Ser Ala Leu Gln His Ser Phe Leu Tyr Phe Gln Lys Cys	
385 390 395 400	
tac cac ttt gtg ttt caa cga tat cgc ctg gag cac tat act gtg aca	1248
Tyr His Phe Val Phe Gln Arg Tyr Arg Leu Glu His Tyr Thr Val Thr	



405	410	415	
tcg aat tgg ctg gca tta gga act gtc ttc ctg ttt ggg ctc ttg tca	1296		
Ser Asn Trp Leu Ala Leu Gly Thr Val Phe Leu Phe Gly Leu Leu Ser			
420	425	430	
ttt tct cgc tct gtg gca ctg ttc aga gga tat cac ggg ccc ctt gat	1344		
Phe Ser Arg Ser Val Ala Leu Phe Arg Gly Tyr His Gly Pro Leu Asp			
435	440	445	
ttg tat cca gaa ttt tac cga att gct aca gac cca acc atc cac act	1392		
Leu Tyr Pro Glu Phe Tyr Arg Ile Ala Thr Asp Pro Thr Ile His Thr			
450	455	460	
gtc cca gaa ggc aga cct gtg aat gtc tgt gtg gga aaa gag tgg tat	1440		
Val Pro Glu Gly Arg Pro Val Asn Val Cys Val Gly Lys Glu Trp Tyr			
465	470	475	480
cga ttt ccc agc agc ttc ctt ctt cct gac aat tgg cag ctt cag ttc	1488		
Arg Phe Pro Ser Ser Phe Leu Leu Pro Asp Asn Trp Gln Leu Gln Phe			
485	490	495	
att cca tca gag ttc aga ggt cag tta cca aaa cct ttt gca gaa gga	1536		
Ile Pro Ser Glu Phe Arg Gly Gln Leu Pro Lys Pro Phe Ala Glu Gly			
500	505	510	
cct ctg gcc acc cgg att gtt cct act gac atg aat gac cag aat cta	1584		
Pro Leu Ala Thr Arg Ile Val Pro Thr Asp Met Asn Asp Gln Asn Leu			
515	520	525	
gaa gag cca tcc aga tat att gat atc agt aaa tgc cat tat tta gtg	1632		
Glu Glu Pro Ser Arg Tyr Ile Asp Ile Ser Lys Cys His Tyr Leu Val			
530	535	540	
gat ttg gac acc atg aga gaa aca ccc cgg gag cca aaa tat tca tcc	1680		

Asp Leu Asp Thr Met Arg Glu Thr Pro Arg Glu Pro Lys Tyr Ser Ser  
 545 550 555 560

aat aaa gaa gaa tgg atc agc ttg gcc tat aga cca ttc ctt gat gct 1728  
 Asn Lys Glu Glu Trp Ile Ser Leu Ala Tyr Arg Pro Phe Leu Asp Ala  
 565 570 575

tct aga tct tca aag ctg ctg cgg gca ttc tat gtc ccc ttc ctg tca 1776  
 Ser Arg Ser Ser Lys Leu Leu Arg Ala Phe Tyr Val Pro Phe Leu Ser  
 580 585 590

gat cag tat aca gtg tac gta aac tac acc atc ctc aaa ccc cgg aaa 1824  
 Asp Gln Tyr Thr Val Tyr Val Asn Tyr Thr Ile Leu Lys Pro Arg Lys  
 595 600 605

gca aag caa atc agg aag aaa agt gga ggt tag 1857  
 Ala Lys Gln Ile Arg Lys Lys Ser Gly Gly  
 610 615

<210> 6

<211> 618

<212> PRT

<213> Homo sapiens

<400> 6

Met Ala Ser Arg Gly Ala Arg Gln Arg Leu Lys Gly Ser Gly Ala Ser  
 1 5 10 15  
 Ser Gly Asp Thr Ala Pro Ala Ala Asp Lys Leu Arg Glu Leu Leu Gly  
 20 25 30  
 Ser Arg Glu Ala Gly Gly Ala Glu His Arg Thr Glu Leu Ser Gly Asn  
 35 40 45  
 Lys Ala Gly Gln Val Trp Ala Pro Glu Gly Ser Thr Ala Phe Lys Cys  
 50 55 60  
 Leu Leu Ser Ala Arg Leu Cys Ala Ala Leu Leu Ser Asn Ile Ser Asp

65                      70                      75                      80  
 Cys Asp Glu Thr Phe Asn Tyr Trp Glu Pro Thr His Tyr Leu Ile Tyr  
                                  85                      90                      95  
 Gly Glu Gly Phe Gln Thr Trp Glu Tyr Ser Pro Ala Tyr Ala Ile Arg  
                                  100                      105                      110  
 Ser Tyr Ala Tyr Leu Leu Leu His Ala Trp Pro Ala Ala Phe His Ala  
                                  115                      120                      125  
 Arg Ile Leu Gln Thr Asn Lys Ile Leu Val Phe Tyr Phe Leu Arg Cys  
                                  130                      135                      140  
 Leu Leu Ala Phe Val Ser Cys Ile Cys Glu Leu Tyr Phe Tyr Lys Ala  
 145                                   150                                   155                                   160  
 Val Cys Lys Lys Phe Gly Leu His Val Ser Arg Met Met Leu Ala Phe  
  
                                  165                      170                      175  
 Leu Val Leu Ser Thr Gly Met Phe Cys Ser Ser Ser Ala Phe Leu Pro  
                                  180                      185                      190  
 Ser Ser Phe Cys Met Tyr Thr Thr Leu Ile Ala Met Thr Gly Trp Tyr  
                                  195                      200                      205  
 Met Asp Lys Thr Ser Ile Ala Val Leu Gly Val Ala Ala Gly Ala Ile  
                                  210                      215                      220  
 Leu Gly Trp Pro Phe Ser Ala Ala Leu Gly Leu Pro Ile Ala Phe Asp  
 225                                   230                                   235                                   240  
 Leu Leu Val Met Lys His Arg Trp Lys Ser Phe Phe His Trp Ser Leu  
                                  245                      250                      255  
 Met Ala Leu Ile Leu Phe Leu Val Pro Val Val Val Ile Asp Ser Tyr  
                                  260                      265                      270  
 Tyr Tyr Gly Lys Leu Val Ile Ala Pro Leu Asn Ile Val Leu Tyr Asn  
                                  275                      280                      285  
 Ile Phe Thr Pro His Gly Pro Asp Leu Tyr Gly Thr Glu Pro Trp Tyr  
                                  290                      295                      300  
 Phe Tyr Leu Ile Asn Gly Phe Leu Asn Phe Asn Val Ala Phe Ala Leu  
 305                                   310                                   315                                   320  
 Ala Leu Leu Val Leu Pro Leu Thr Ser Leu Met Glu Tyr Leu Leu Gln  
                                  325                      330                      335  
 Arg Phe His Val Gln Asn Leu Gly His Pro Tyr Trp Leu Thr Leu Ala

340	345	350
Pro Met Tyr Ile Trp Phe Ile Ile Phe Phe Ile Gln Pro His Lys Glu		
355	360	365
Glu Arg Phe Leu Phe Pro Val Tyr Pro Leu Ile Cys Leu Cys Gly Ala		
370	375	380
Val Ala Leu Ser Ala Leu Gln His Ser Phe Leu Tyr Phe Gln Lys Cys		
385	390	395
Tyr His Phe Val Phe Gln Arg Tyr Arg Leu Glu His Tyr Thr Val Thr		
405	410	415
Ser Asn Trp Leu Ala Leu Gly Thr Val Phe Leu Phe Gly Leu Leu Ser		
420	425	430
Phe Ser Arg Ser Val Ala Leu Phe Arg Gly Tyr His Gly Pro Leu Asp		
435	440	445
Leu Tyr Pro Glu Phe Tyr Arg Ile Ala Thr Asp Pro Thr Ile His Thr		
450	455	460
Val Pro Glu Gly Arg Pro Val Asn Val Cys Val Gly Lys Glu Trp Tyr		
465	470	475
Arg Phe Pro Ser Ser Phe Leu Leu Pro Asp Asn Trp Gln Leu Gln Phe		
485	490	495
Ile Pro Ser Glu Phe Arg Gly Gln Leu Pro Lys Pro Phe Ala Glu Gly		
500	505	510
Pro Leu Ala Thr Arg Ile Val Pro Thr Asp Met Asn Asp Gln Asn Leu		
515	520	525
Glu Glu Pro Ser Arg Tyr Ile Asp Ile Ser Lys Cys His Tyr Leu Val		
530	535	540
Asp Leu Asp Thr Met Arg Glu Thr Pro Arg Glu Pro Lys Tyr Ser Ser		
545	550	555
Asn Lys Glu Glu Trp Ile Ser Leu Ala Tyr Arg Pro Phe Leu Asp Ala		
565	570	575
Ser Arg Ser Ser Lys Leu Leu Arg Ala Phe Tyr Val Pro Phe Leu Ser		
580	585	590
Asp Gln Tyr Thr Val Tyr Val Asn Tyr Thr Ile Leu Lys Pro Arg Lys		
595	600	605
Ala Lys Gln Ile Arg Lys Lys Ser Gly Gly		
610	615	

&lt;210&gt; 7

&lt;211&gt; 1422

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1422)

&lt;400&gt; 7

atg gcg cag ctg gaa ggt tac tat ttc tcg gcc gcc ttg agc tgt acc 48  
 Met Ala Gln Leu Glu Gly Tyr Tyr Phe Ser Ala Ala Leu Ser Cys Thr

1 5 10 15

ttt tta gta tcc tgc ctc ctc ttc tcc gcc ttc agc cgg gcg ttg cga 96  
 Phe Leu Val Ser Cys Leu Leu Phe Ser Ala Phe Ser Arg Ala Leu Arg

20 25 30

gag ccc tac atg gac gag atc ttc cac ctg cct cag gcg cag cgc tac 144  
 Glu Pro Tyr Met Asp Glu Ile Phe His Leu Pro Gln Ala Gln Arg Tyr

35 40 45

tgt gag ggc cat ttc tcc ctt tcc cag tgg gat ccc atg att act aca 192  
 Cys Glu Gly His Phe Ser Leu Ser Gln Trp Asp Pro Met Ile Thr Thr

50 55 60

tta cct ggc ttg tac ctg gtg tca att gga gtg atc aaa cct gcc att 240  
 Leu Pro Gly Leu Tyr Leu Val Ser Ile Gly Val Ile Lys Pro Ala Ile

65 70 75 80

tgg atc ttt gga tgg tct gaa cat gtt gtc tgc tcc att ggg atg ctc 288  
 Trp Ile Phe Gly Trp Ser Glu His Val Val Cys Ser Ile Gly Met Leu

85	90	95	
aga ttt gtt aat ctt ctc ttc agt gtt ggc aac ttc tat tta cta tat			336
Arg Phe Val Asn Leu Leu Phe Ser Val Gly Asn Phe Tyr Leu Leu Tyr			
100	105	110	
ttg ctt ttc tgc aag gta caa ccc aga aac aag gct gcc tca agt atc			384
Leu Leu Phe Cys Lys Val Gln Pro Arg Asn Lys Ala Ala Ser Ser Ile			
115	120	125	
cag aga gtc ttg tca aca tta aca cta gca gta ttt cca aca ctt tat			432
Gln Arg Val Leu Ser Thr Leu Thr Leu Ala Val Phe Pro Thr Leu Tyr			
130	135	140	
ttt ttt aac ttc ctt tat tat aca gaa gca gga tct atg ttt ttt act			480
Phe Phe Asn Phe Leu Tyr Tyr Thr Glu Ala Gly Ser Met Phe Phe Thr			
145	150	155	160
ctt ttt gcg tat ttg atg tgt ctt tat gga aat cat aaa act tca gcc			528
Leu Phe Ala Tyr Leu Met Cys Leu Tyr Gly Asn His Lys Thr Ser Ala			
165	170	175	
ttc ctt gga ttt tgt ggc ttc atg ttt cgg caa aca aat atc atc tgg			576
Phe Leu Gly Phe Cys Gly Phe Met Phe Arg Gln Thr Asn Ile Ile Trp			
180	185	190	
gct gtc ttc tgt gca gga aat gtc att gca caa aag tta acg gag gct			624
Ala Val Phe Cys Ala Gly Asn Val Ile Ala Gln Lys Leu Thr Glu Ala			
195	200	205	
tgg aaa act gag cta caa aag aag gaa gac aga ctt cca cct att aaa			672
Trp Lys Thr Glu Leu Gln Lys Lys Glu Asp Arg Leu Pro Pro Ile Lys			
210	215	220	

cat tat act ttc tat gtg tgg aaa aga gtt ttt caa aga tat gaa act 1104  
His Tyr Thr Phe Tyr Val Trp Lys Arg Val Phe Gln Arg Tyr Glu Thr  
355 360 365

gta aaa tat ttg tta gtt cca gcc tat ata ttt gct ggt tgg agt ata 1152  
 Val Lys Tyr Leu Leu Val Pro Ala Tyr Ile Phe Ala Gly Trp Ser Ile  
 370 375 380

gct gac tca ttg aaa tca aag tca att ttt tgg aat tta atg ttt ttc 1200  
 Ala Asp Ser Leu Lys Ser Lys Ser Ile Phe Trp Asn Leu Met Phe Phe  
 385 390 395 400

ata tgc ttg ttc act gtt ata gtt cct cag aaa ctg ctg gaa ttt cgt 1248  
 Ile Cys Leu Phe Thr Val Ile Val Pro Gln Lys Leu Leu Glu Phe Arg  
 405 410 415

tac ttc att tta cct tat gtc att tat agg ctt aac ata cct ctg cct 1296  
 Tyr Phe Ile Leu Pro Tyr Val Ile Tyr Arg Leu Asn Ile Pro Leu Pro  
 420 425 430

ccc aca tcc aga ctc att tgt gaa ctg agc tgc tat gca gtt gtt aat 1344  
 Pro Thr Ser Arg Leu Ile Cys Glu Leu Ser Cys Tyr Ala Val Val Asn  
 435 440 445

ttc ata act ttt ttc atc ttt ctg aac aag act ttt cag tgg cca aat 1392  
 Phe Ile Thr Phe Phe Ile Phe Leu Asn Lys Thr Phe Gln Trp Pro Asn  
 450 455 460

agt cag gac att caa agg ttt atg tgg taa 1422  
 Ser Gln Asp Ile Gln Arg Phe Met Trp  
 465 470

<210> 8

<211> 473

<212> PRT

<213> Homo sapiens



&lt;400&gt; 8

Met Ala Gln Leu Glu Gly Tyr Tyr Phe Ser Ala Ala Leu Ser Cys Thr  
 1 5 10 15  
 Phe Leu Val Ser Cys Leu Leu Phe Ser Ala Phe Ser Arg Ala Leu Arg  
 20 25 30  
 Glu Pro Tyr Met Asp Glu Ile Phe His Leu Pro Gln Ala Gln Arg Tyr  
 35 40 45  
 Cys Glu Gly His Phe Ser Leu Ser Gln Trp Asp Pro Met Ile Thr Thr  
 50 55 60  
 Leu Pro Gly Leu Tyr Leu Val Ser Ile Gly Val Ile Lys Pro Ala Ile  
 65 70 75 80  
 Trp Ile Phe Gly Trp Ser Glu His Val Val Cys Ser Ile Gly Met Leu  
 85 90 95  
 Arg Phe Val Asn Leu Leu Phe Ser Val Gly Asn Phe Tyr Leu Leu Tyr  
 100 105 110  
 Leu Leu Phe Cys Lys Val Gln Pro Arg Asn Lys Ala Ala Ser Ser Ile  
 115 120 125  
 Gln Arg Val Leu Ser Thr Leu Thr Leu Ala Val Phe Pro Thr Leu Tyr  
 130 135 140  
 Phe Phe Asn Phe Leu Tyr Tyr Thr Glu Ala Gly Ser Met Phe Phe Thr  
 145 150 155 160  
 Leu Phe Ala Tyr Leu Met Cys Leu Tyr Gly Asn His Lys Thr Ser Ala  
 165 170 175  
 Phe Leu Gly Phe Cys Gly Phe Met Phe Arg Gln Thr Asn Ile Ile Trp  
 180 185 190  
 Ala Val Phe Cys Ala Gly Asn Val Ile Ala Gln Lys Leu Thr Glu Ala  
 195 200 205  
 Trp Lys Thr Glu Leu Gln Lys Lys Glu Asp Arg Leu Pro Pro Ile Lys  
 210 215 220  
 Gly Pro Phe Ala Glu Phe Arg Lys Ile Leu Gln Phe Leu Leu Ala Tyr  
 225 230 235 240  
 Ser Met Ser Phe Lys Asn Leu Ser Met Leu Leu Leu Thr Trp Pro  
 245 250 255  
 Tyr Ile Leu Leu Gly Phe Leu Phe Cys Ala Phe Val Val Val Asn Gly

260	265	270
Gly Ile Val Ile Gly Asp Arg Ser Ser His Glu Ala Cys Leu His Phe		
275	280	285
Pro Gln Leu Phe Tyr Phe Phe Ser Phe Thr Leu Phe Phe Ser Phe Pro		
290	295	300
His Leu Leu Ser Pro Ser Lys Ile Lys Thr Phe Leu Ser Leu Val Trp		
305	310	315
Lys Arg Arg Ile Leu Phe Phe Val Val Thr Leu Val Ser Val Phe Leu		
325	330	335
Val Trp Lys Phe Thr Tyr Ala His Lys Tyr Leu Leu Ala Asp Asn Arg		
340	345	350
His Tyr Thr Phe Tyr Val Trp Lys Arg Val Phe Gln Arg Tyr Glu Thr		
355	360	365
Val Lys Tyr Leu Leu Val Pro Ala Tyr Ile Phe Ala Gly Trp Ser Ile		
370	375	380
Ala Asp Ser Leu Lys Ser Lys Ser Ile Phe Trp Asn Leu Met Phe Phe		
385	390	395
Ile Cys Leu Phe Thr Val Ile Val Pro Gln Lys Leu Leu Glu Phe Arg		
405	410	415
Tyr Phe Ile Leu Pro Tyr Val Ile Tyr Arg Leu Asn Ile Pro Leu Pro		
420	425	430
Pro Thr Ser Arg Leu Ile Cys Glu Leu Ser Cys Tyr Ala Val Val Asn		
435	440	445
Phe Ile Thr Phe Phe Ile Phe Leu Asn Lys Thr Phe Gln Trp Pro Asn		
450	455	460
Ser Gln Asp Ile Gln Arg Phe Met Trp		
465	470	

&lt;210&gt; 9

&lt;211&gt; 1467

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1467)

&lt;400&gt; 9

atg gct gga aag ggg tca tca ggc agg cgg ccc ctg ctg ctg ggg ctg 48

Met Ala Gly Lys Gly Ser Ser Gly Arg Arg Pro Leu Leu Leu Gly Leu

1 5 10 15

ctg gtg gcc gta gcc act gtc cac ctg gtc atc tgt ccc tac acc aaa 96

Leu Val Ala Val Ala Thr Val His Leu Val Ile Cys Pro Tyr Thr Lys

20 25 30

gtg gag gag agc ttc aac ctg cag gcc aca cat gac ctg ctc tac cac 144

Val Glu Glu Ser Phe Asn. Leu Gln Ala Thr His Asp Leu Leu Tyr His

35 40 45

tgg caa gac ctg gag cag tac gac cat ctt gag ttc ccc gga gtc gtc 192

Trp Gln Asp Leu Glu Gln Tyr Asp His Leu Glu Phe Pro Gly Val Val

50 55 60

ccc agg acg ttc ctc ggg cca gtg gtg atc gca gtg ttc tcc agc ccc 240

Pro Arg Thr Phe Leu Gly Pro Val Val Ile Ala Val Phe Ser Ser Pro

65 70 75 80

gcg gtt tac gtg ctt tcg ctg tta gaa atg tcc aag ttt tac tct cag 288

Ala Val Tyr Val Leu Ser Leu Leu Glu Met Ser Lys Phe Tyr Ser Gln

85 90 95

cta ata gtt aga gga gtg ctt gga ctc ggc gtg att ttt gga ctc tgg 336

Leu Ile Val Arg Gly Val Leu Gly Leu Gly Val Ile Phe Gly Leu Trp

100 105 110

acg tta caa aag gaa gtg aga cgg cac ttc ggg gcc atg gtg gcc acc 384

Thr Leu Gln Lys Glu Val Arg Arg His Phe Gly Ala Met Val Ala Thr

115	120	125	
atg ttc tgc tgg gtg acg gcc atg cag ttc cac ctg atg ttc tac tgc			432
Met Phe Cys Trp Val Thr Ala Met Gln Phe His Leu Met Phe Tyr Cys			
130	135	140	
acg cgg aca ctg ccc aat gtg ctg gcc ctg cct gta gtc ctg ctg gcc			480
Thr Arg Thr Leu Pro Asn Val Leu Ala Leu Pro Val Val Leu Leu Ala			
145	150	155	160
ctc gcg gcc tgg ctg cgg cac gag tgg gcc cgc ttc atc tgg ctg tca			528
Leu Ala Ala Trp Leu Arg His Glu Trp Ala Arg Phe Ile Trp Leu Ser			
165	170	175	
gcc ttc gcc atc atc gtg ttc agg gtg gag ctg tgc ctg ttc ctg gcc			576
Ala Phe Ala Ile Ile Val Phe Arg Val Glu Leu Cys Leu Phe Leu Gly			
180	185	190	
ctc ctg ctg ctg ctg gcc ttg ggc aac cga aag gtt tct gta gtc aga			624
Leu Leu Leu Leu Leu Ala Leu Gly Asn Arg Lys Val Ser Val Val Arg			
195	200	205	
gcc ctt cgc cac gcc gtc ccg gca ggg atc ctc tgt tta gga ctg acg			672
Ala Leu Arg His Ala Val Pro Ala Gly Ile Leu Cys Leu Gly Leu Thr			
210	215	220	
gtt gct gtg gac tct tat ttt tgg cgg cag ctc act tgg ccg gaa gga			720
Val Ala Val Asp Ser Tyr Phe Trp Arg Gln Leu Thr Trp Pro Glu Gly			
225	230	235	240
aag gtg ctt tgg tac aac act gtc ctg aac aaa agc tcc aac tgg ggg			768
Lys Val Leu Trp Tyr Asn Thr Val Leu Asn Lys Ser Ser Asn Trp Gly			
245	250	255	
acc tcc ccg ctg ctg tgg tac ttc tac tca gcc ctg ccc cgc ggc ctg			816

Thr Ser Pro Leu Leu Trp Tyr Phe Tyr Ser Ala Leu Pro Arg Gly Leu	
260	265
270	
ggc tgc agc ctg ctc ttc atc ccc ctg ggc ttg gta gac aga agg acg	864
Gly Cys Ser Leu Leu Phe Ile Pro Leu Gly Leu Val Asp Arg Arg Thr	
275	280
285	
cac gcg ccg acg gtg ctg gca ctg ggc ttc atg gca ctc tac tcc ctc	912
His Ala Pro Thr Val Leu Ala Leu Gly Phe Met Ala Leu Tyr Ser Leu	
290	295
300	
ctg cca cac aag gag cta cgc ttc atc atc tat gcc ttc ccc atg ctc	960
Leu Pro His Lys Glu Leu Arg Phe Ile Ile Tyr Ala Phe Pro Met Leu	
305	310
315	320
aac atc acg gct gcc aga ggc tgc tcc tac ctg ctg aat aac tat aaa	1008
Asn Ile Thr Ala Ala Arg Gly Cys Ser Tyr Leu Leu Asn Asn Tyr Lys	
325	330
335	
aag tct tgg ctg tac aaa gcg ggg tct ctg ctt gtg atc gga cac ctc	1056
Lys Ser Trp Leu Tyr Lys Ala Gly Ser Leu Leu Val Ile Gly His Leu	
340	345
350	
gtg gtg aat gcc gcc tac tca gcc acg gcc ctg tat gtg tcc cat ttc	1104
Val Val Asn Ala Ala Tyr Ser Ala Thr Ala Leu Tyr Val Ser His Phe	
355	360
365	
aac tac cca ggt ggc gtc gca atg cag agg ctg cac cag ctg gtg ccc	1152
Asn Tyr Pro Gly Gly Val Ala Met Gln Arg Leu His Gln Leu Val Pro	
370	375
380	
ccc cag aca gac gtc ctt ctg cac att gac gtg gca gcc gcc cag aca	1200
Pro Gln Thr Asp Val Leu Leu His Ile Asp Val Ala Ala Ala Gln Thr	
385	390
395	400

ggt gtg tct cgg ttt ctc caa gtc aac agc gcc tgg agg tac gac aag 1248  
 Gly Val Ser Arg Phe Leu Gln Val Asn Ser Ala Trp Arg Tyr Asp Lys  
 405 410 415

agg gag gat gtg cag ccg ggg aca ggc atg ctg gca tac aca cac atc 1296  
 Arg Glu Asp Val Gln Pro Gly Thr Gly Met Leu Ala Tyr Thr His Ile  
 420 425 430

ctc atg gag gcg gcc cct ggg ctc ctg gcc ctc tac agg gac aca cac 1344  
 Leu Met Glu Ala Ala Pro Gly Leu Leu Ala Leu Tyr Arg Asp Thr His  
 435 440 445

cgg gtc ctg gcc agc gtc gtg ggg acc aca ggt gtg agt ctg aac ctg 1392  
 Arg Val Leu Ala Ser Val Val Gly Thr Thr Gly Val Ser Leu Asn Leu  
 450 455 460

acc caa ctg ccc ccc ttc aac gtc cac ctg cag aca aag ctg gtg ctt 1440  
 Thr Gln Leu Pro Pro Phe Asn Val His Leu Gln Thr Lys Leu Val Leu  
 465 470 475 480

ctg gag agg ctc ccc cgg ccg tcc tga 1467  
 Leu Glu Arg Leu Pro Arg Pro Ser  
 485

<210> 10

<211> 488

<212> PRT

<213> Homo sapiens

<400> 10

Met Ala Gly Lys Gly Ser Ser Gly Arg Arg Pro Leu Leu Leu Gly Leu  
 1 5 10 15  
 Leu Val Ala Val Ala Thr Val His Leu Val Ile Cys Pro Tyr Thr Lys  
 20 25 30

Val Glu Glu Ser Phe Asn Leu Gln Ala Thr His Asp Leu Leu Tyr His  
 35 40 45  
 Trp Gln Asp Leu Glu Gln Tyr Asp His Leu Glu Phe Pro Gly Val Val  
 50 55 60  
 Pro Arg Thr Phe Leu Gly Pro Val Val Ile Ala Val Phe Ser Ser Pro  
 65 70 75 80  
 Ala Val Tyr Val Leu Ser Leu Leu Glu Met Ser Lys Phe Tyr Ser Gln  
 85 90 95  
 Leu Ile Val Arg Gly Val Leu Gly Leu Gly Val Ile Phe Gly Leu Trp  
 100 105 110  
 Thr Leu Gln Lys Glu Val Arg Arg His Phe Gly Ala Met Val Ala Thr  
 115 120 125  
 Met Phe Cys Trp Val Thr Ala Met Gln Phe His Leu Met Phe Tyr Cys  
 130 135 140  
 Thr Arg Thr Leu Pro Asn Val Leu Ala Leu Pro Val Val Leu Leu Ala  
 145 150 155 160  
 Leu Ala Ala Trp Leu Arg His Glu Trp Ala Arg Phe Ile Trp Leu Ser  
 165 170 175  
 Ala Phe Ala Ile Ile Val Phe Arg Val Glu Leu Cys Leu Phe Leu Gly  
 180 185 190  
  
 Leu Leu Leu Leu Leu Ala Leu Gly Asn Arg Lys Val Ser Val Val Arg  
 195 200 205  
 Ala Leu Arg His Ala Val Pro Ala Gly Ile Leu Cys Leu Gly Leu Thr  
 210 215 220  
 Val Ala Val Asp Ser Tyr Phe Trp Arg Gln Leu Thr Trp Pro Glu Gly  
 225 230 235 240  
 Lys Val Leu Trp Tyr Asn Thr Val Leu Asn Lys Ser Ser Asn Trp Gly  
 245 250 255  
 Thr Ser Pro Leu Leu Trp Tyr Phe Tyr Ser Ala Leu Pro Arg Gly Leu  
 260 265 270  
 Gly Cys Ser Leu Leu Phe Ile Pro Leu Gly Leu Val Asp Arg Arg Thr  
 275 280 285  
 His Ala Pro Thr Val Leu Ala Leu Gly Phe Met Ala Leu Tyr Ser Leu  
 290 295 300

Leu Pro His Lys Glu Leu Arg Phe Ile Ile Tyr Ala Phe Pro Met Leu  
 305                      310                      315                      320  
 Asn Ile Thr Ala Ala Arg Gly Cys Ser Tyr Leu Leu Asn Asn Tyr Lys  
                          325                      330                      335  
 Lys Ser Trp Leu Tyr Lys Ala Gly Ser Leu Leu Val Ile Gly His Leu  
                          340                      345                      350  
 Val Val Asn Ala Ala Tyr Ser Ala Thr Ala Leu Tyr Val Ser His Phe  
                          355                      360                      365  
 Asn Tyr Pro Gly Gly Val Ala Met Gln Arg Leu His Gln Leu Val Pro  
                          370                      375                      380  
 Pro Gln Thr Asp Val Leu Leu His Ile Asp Val Ala Ala Ala Gln Thr  
 385                      390                      395                      400  
 Gly Val Ser Arg Phe Leu Gln Val Asn Ser Ala Trp Arg Tyr Asp Lys  
                          405                      410                      415  
 Arg Glu Asp Val Gln Pro Gly Thr Gly Met Leu Ala Tyr Thr His Ile  
                          420                      425                      430  
 Leu Met Glu Ala Ala Pro Gly Leu Leu Ala Leu Tyr Arg Asp Thr His  
                          435                      440                      445  
 Arg Val Leu Ala Ser Val Val Gly Thr Thr Gly Val Ser Leu Asn Leu  
                          450                      455                      460  
 Thr Gln Leu Pro Pro Phe Asn Val His Leu Gln Thr Lys Leu Val Leu  
 465                      470                      475                      480  
 Leu Glu Arg Leu Pro Arg Pro Ser  
                          485